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☐ 1. Document ID: US 20020118385 A1

L8: Entry 1 of 16 File: PGPB Aug 29, 2002

DOCUMENT-IDENTIFIER: US 20020118385 A1
TITLE: PRINTING SYSTEM, AND PRINTING CONTROL METHOD AND APPARATUS

Application Filing Date:
19980303

Current US Classification, US Primary Class/Subclass:
358/1.15

Current US Classification, US Secondary Class/Subclass:
358/2.1

Detail Description Paragraph:
[0069] FIG. 1 shows an example of the sequence of the data correction control method (implemented by the calibration controller 106 in FIG. 2) in this embodiment. This sequence includes the input operation step S1 of printing with respect to, e.g., an application program, the first normal calibration processing step S2 of acquiring correction data from the printer, the first normal image processing step S3 of performing RGB.fwdarw.YMCK conversion, the second calibration processing step S4 of performing multi-valued gamma correction for the YMCK-converted data, and the normal second image processing step S5 of binarizing and outputting the corrected data.

Detail Description Paragraph:
[0093] The input operation step S1 of printing with respect to, e.g., an application program is done first, and the first normal image processing step S2, first calibration step S3, second calibration processing step S4, and second normal image processing step S5 are executed in turn.

Detail Description Paragraph:
[0103] Note that some user applications may place an importance not on color reproducibility but on a decrease in processing time. In such case, as shown in FIG. 8, whether or not calibration is to be done, i.e., the first and second calibration processing steps are to be executed may be manually selected on a user interface corresponding to the printer.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

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☑ 2. Document ID: US 6256111 B1

L8: Entry 2 of 16 File: USPT Jul 3, 2001

DOCUMENT-IDENTIFIER: US 6256111 B1
TITLE: Calibrating digital halftoning algorithms with multiple personalities

Abstract Text (1):
A method, apparatus, and article of manufacture for updating the calibration of a printer or printers which use multiple calibration functions. The method comprises the steps of applying the first calibration function to grayscale commands to obtain modified grayscale commands, printing the grayscale patches with the modified printing commands, and measuring the resulting grayscale values. Using this data, an updated printer calibration function t(i) is generated such that mapping the printer commands through t(i) results in printed grayscales substantially matching the commanded grayscales. Then, the updated printer calibration function t(i) is used to update the printer calibration function f(i) to obtain g(i). The apparatus comprises a means for obtaining modified grayscale commands by applying a first calibration function, a printer to print grayscale patches with the modified printing commands, and a scanner or densitometer for measuring the resulting grayscale values. The apparatus also comprises a means for obtaining an updated printer calibration function and a means for deriving an updated function g(i) based on the updated printer calibration function. In an alternative embodiment, the foregoing is used to update scanner calibration.

Application Filing Date (1):
19980619

Brief Summary Text (16):
To address the requirements described above, the present invention discloses a method, apparatus, and article of manufacture for calibrating digital halftoning algorithms with multiple personalities by updating the calibration of a printer or a scanner configured with a first calibration function l(i) and a second calibration function f(i). The method comprises the steps of applying the first calibration function to grayscale commands to obtain modified grayscale commands, printing the grayscale patches with the modified printing commands, and measuring the resulting grayscale values. Using this data, an updated printer calibration function t(i) is generated such that mapping the printer commands through t(i) results in printed grayscales substantially matching the commanded grayscales. Then, the updated printer calibration function t(i) is used to update the printer calibration function f(i) to obtain g(i). The apparatus comprises a means for obtaining modified grayscale commands by applying a first calibration function, a printer to print grayscale patches with the modified printing commands, and a scanner or densitometer for measuring the resulting grayscale values. The apparatus also comprises a means for obtaining an updated printer calibration function and a means for deriving an updated function g(i) based on the updated printer calibration function.

Detailed Description Text (30):
This concludes the description of the preferred embodiments of the present invention. In summary, the present invention describes a method, apparatus, and article of manufacture for updating the calibration of a printer or a scanner using a first calibration function l(i) and a second calibration function f(i). The method comprises the steps of applying the first calibration function to grayscale commands to obtain modified grayscale commands, printing the grayscale patches with the modified printing commands, and measuring the resulting grayscale values. Using this data, an updated printer calibration function t(i) is generated such that

mapping the printer commands through t(i) results in printed grayscales substantially matching the commanded grayscales. Then, the updated printer calibration function t(i) is used to update the printer calibration function f(i) to obtain g(i).

Current US Original Classification (1):
358/1.9

Current US Cross Reference Classification (1):
358/1.13

Current US Cross Reference Classification (2):
358/1.15

Current US Cross Reference Classification (3):
358/1.16

CLAIMS:

1. A method of updating a calibration of a printer using a first calibration function l(i) and a second calibration function f(i), comprising the steps of:

applying l(i) to printer grayscale commands i to generate modified printer grayscale commands, each printer grayscale command associated with a reference grayscale value;

printing grayscale patches with the modified printer grayscale commands, each grayscale patch manifesting a grayscale value;

measuring the grayscale values of the grayscale patches;

deriving a first updated printer calibration function t(i) from the printer grayscale commands and the measured grayscale values, the function t(i) converting the printer grayscale commands to updated printer grayscale commands such that the measured grayscale value of the printed grayscale patches substantially matches the reference grayscale values of the associated grayscale value print command;

deriving a second updated printer calibration function g(i) from the functions t (i), f(i), and l(i); and

wherein N represents a number of possible grayscale values, and the step of deriving g(i) comprises the step of determining g(i) according to the relation:

g(i)=t(j) such that j=arg[min(.vertline.f(i)-l(j).vertline. for j=0, 1, 2, N-1)].

7. An apparatus for updating a calibration of a printer using a first calibration function l(i) and a second calibration function f(i), comprising:

means for applying l(i) to printer grayscale commands i to generate modified printer grayscale commands, each printer grayscale command associated with a reference grayscale value;

a printer for printing grayscale patches with the modified printer grayscale commands, each grayscale patch manifesting a grayscale value;

means for measuring the grayscale values of the grayscale patches;

means for deriving an updated first printer calibration function t(i) from the printer grayscale commands and the measured grayscale values, the function t(i) converting the printer grayscale commands to updated printer grayscale commands

such that the measured grayscale value of the printed grayscale patches substantially matches the reference grayscale values of the associated grayscale value print command;

means for deriving an updated second printer calibration function g(i) from the functions t(i), f(i), and l(i); and

wherein N represents a number of possible grayscale values, and the means for deriving g(i) comprises means for determining g(i) according to the relation:

g(i)=t(j) such that j=arg[min(.vertline.f(i)-l(j).vertline. for j=0, 1, 2, . . . N-1)].

13. A program storage device, readable by computer, tangibly embodying one or more programs of instructions executable by the computer to perform method steps of updating a calibration of a printer using a first calibration function l(i) and a second calibration function f(i), the method steps comprising the steps of:

applying l(i) to printer grayscale commands i to generate modified printer grayscale commands, each printer grayscale command associated with a reference grayscale value;

printing grayscale patches with the modified printer grayscale commands, each grayscale patch manifesting a grayscale value;

measuring the grayscale values of the grayscale patches;

deriving a updated first printer calibration function t(i) from the printer grayscale commands and the measured grayscale values, the function t(i) converting the printer grayscale commands to updated printer grayscale commands such that the measured grayscale value of the printed grayscale patches substantially matches the reference grayscale values of the associated grayscale value print command;

deriving a second updated second printer calibration function g(i) from the functions t(i), f(i), and l(i); and

wherein N represents a number of possible grayscale values, and the method step of deriving g(i) comprises the method step of determining g(i) according to the relation:

g(i)=t(j) such that j=arg[min(.vertline.f(i)-l(j).vertline. for j=0, 1, 2, . . . N-1)].

19. A memory for storing an updated first calibration function t(i) derived from a first calibration function l(i) and an updated second calibration function g(i) derived from a second calibration function f(i),wherein i represents printer grayscale commands, wherein the updated printer calibration functions g(i) and f(i) are derived by performing the steps of:

applying l(i) to the printer grayscale commands to generate modified printer grayscale commands, each printer grayscale command associated with a reference grayscale value;

printing grayscale patches with the modified printer grayscale commands, each grayscale patch manifesting a grayscale value;

measuring the grayscale values of the grayscale patches;

deriving the updated printer calibration function t(i) from the printed grayscale commands and the measured grayscale values, the function t(i) converting the

printer grayscale commands to updated printer grayscale commands such that the measured grayscale values of the printed grayscale patches substantially matches the reference grayscale values of the associated grayscale value print command;

deriving the updated printer calibration function g(i) from the functions t(i), f (i), and l(i); and

wherein N represents a number of possible grayscale values and the method step of deriving g(i) comprises the method step of determining g(i) according to the relation:

g(i)=t(j) such that j=arg[min(.vertline.f(i)-l(j).vertline. for j=0, 1, 2, . . . N-1)].

☐ 3. Document ID: US 6226419 B1

L8: Entry 3 of 16 File: USPT May 1, 2001

DOCUMENT-IDENTIFIER: US 6226419 B1
TITLE: Automatic margin alignment using a digital document processor

Abstract Text (1):
A system for automatic margin alignment for digital document processors. An output device is calibrated to graphics software without requiring the user to input offset information. The user need only print out first and second calibration sheets, overlay the first sheet on the second, and scan in the overlaid sheets. Margin marks such as vertical and horizontal lines on the first calibrating sheet signal the location of the respective horizontal and vertical margins. The edge of the first calibration sheet contrasts with the second calibration sheet to enable the scanner to detect the edge. Software calculates the required (x,y) offsets based on the number of scanning pixels between the edge of the first calibration sheet and the margin marks, and the resolution of the scanner. A rotational mis-calibration of the output device may also be calculated.

Application Filing Date (1):
19990226

Detailed Description Text (13):
FIG. 3 illustrates an automatic margin alignment process in accordance with the present invention. The output device 16 is used to print first and second calibration sheets 180, 190, respectively. The first sheet 180 is overlaid on the second sheet 190 and the combination is provided to the scanner 17 to be scanned. Data from the scanner 17 corresponding to the scanned-in calibration sheets is then provided for use, e.g., by the graphic image server 14 in FIG. 2 for processing in accordance with the present invention to determine a vertical and/or horizontal mis-calibration of the printer 16 with respect to the image provided on the display 15 used with the graphics layout software.

Detailed Description Text (15):
Only the first calibration sheet 180 must be printed out on the output device to be calibrated. The second calibration sheet can be provided as a pre-printed form, or

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printed on any other printer. That is, the relative position of the first and second calibration sheets need not be exact as long as a contrast is provided at the transition between the two sheets at an edge of the first sheet.

Detailed Description Text (23):
FIG. 6 illustrates an overlay of the first calibration sheet on the second calibration sheet for scanning in accordance with the present invention. Once the first and second calibration sheets 180, 190 are printed by the user on the printer which is to be calibrated, the first calibration sheet 180 may be overlaid on the second calibration sheet 190, e.g., in the upper left-hand portion of the second calibration sheet 190. The alignment mark 181 of the first sheet 180 may be overlaid on the alignment mark 191 of the second sheet 190. The alignment marks 181, 191, which are optional, assist the user in positioning the first and second calibration sheets for scanning.

Detailed Description Text (43):
FIG. 9 illustrates a calibration method in accordance with the present invention. At block 910, the first and second calibration sheets are printed out on the output device which is to be calibrated. As mentioned, only the first calibration sheet must be printed out on the output device to be calibrated. The second calibration sheet can be provided as a pre-printed form, or printed on any printer. Moreover, the alignment marks 181, 191 need not be aligned with one another if the first calibration sheet and second calibration sheet are not printed on the same printer. In the example calibration sheets shown, it is only necessary for the top and left edges of the first calibration sheet to be aligned on the scanner, and for the shaded regions 195, 198 to be adjacent to the respective edges 189, 188 of the first calibration sheet 180 in a region of the scanning lines E and H (FIG. 6).

Detailed Description Text (45):
As can be seen, the present invention provides a method and apparatus for automatic margin alignment using a digital document processor. The digital document processor calibrates and rasterizes data received from a PC running a graphics layout software. The rasterized and calibrated data, e.g., bitmap data, is then printed. Advantageously, an output device is calibrated to the graphics layout software without requiring the user to input offset information. The user need only print out first and second calibration sheets, overlay the first sheet on the second, and scan in the overlaid sheets. Margin marks, such as vertical and horizontal lines on the first calibrating sheet, signal the location of the respective horizontal and vertical margins.

Detailed Description Text (48):
Moreover, it is possible to print a duplex print with calibration marks on each side, e.g., for calibrating a duplex tray of a printer. In this case, each side of the printed calibration sheet is overlaid on the second calibration sheet and scanned in to obtain the corresponding calibration data.

Current US Cross Reference Classification (1):
358/1.18

Current US Cross Reference Classification (2):
358/406

☐ 4. Document ID: US 6161914 A

L8: Entry 4 of 16 File: USPT Dec 19, 2000

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DOCUMENT-IDENTIFIER: US 6161914 A
TITLE: Alignment sensor system for multiple print cartridges

Application Filing Date (1):
19970630

Current US Cross Reference Classification (2):
358/1.5

CLAIMS:

10. A swath printing system for calibrating and correcting alignment differences between a plurality of nozzle groups mounted on a carriage for printing on a pixel grid comprising:

a first group of ink ejection nozzles;

a second group of ink ejection nozzles different from said first group;

a carriage for mounting said first group and second group of nozzles;

a controller coupled to said ink ejection nozzles for printing a first calibration segment from said first group and a second calibration segment from said second group;

an optical sensor positioned over the pixel grid to detect the relative positions of said first calibration segment and said second calibration segment and generate an encoded signal based on said relative positions; and

a signal processor in communication with said optical sensor to receive said encoded signal and generate a correction in order to cause appropriate data signals to activate said ink ejection nozzles at an appropriate location on the pixel grid.

12. The printing system of claim 11 wherein said first calibration segment and said second calibration segment are spaced apart horizontal line segments, and said signal processor generates a correction of vertical misalignment between said first print cartridge and said second print cartridge.

13. The printing system of claim 11 wherein said first calibration segment and said second calibration segment are spaced apart vertical line segments, and said signal processor generates a correction of horizontal misalignment between said first print cartridge and said second print cartridge.

☐ 5. Document ID: US 6016207 A

L8: Entry 5 of 16 File: USPT Jan 18, 2000

DOCUMENT-IDENTIFIER: US 6016207 A
TITLE: Facsimile scan position calibration apparatus and method

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Application Filing Date (1):
19970724

Detailed Description Text (12):
In a second preferred embodiment of the present invention, a calibration chart is printed by a printer associated with the Fax machine to be calibrated. FIG. 5 illustrates a printed calibration chart 501. The chart is printed with a cut-of line 503 and a calibration pattern 505 where the calibration pattern consists of a number of vertically staggered horizontal lines. Each of the horizontal lines are spaced a known vertical distance from adjacent lines. The calibration pattern is also printed a known distance below the cut-off line 503.

Current US Original Classification (1):
358/406

Current US Cross Reference Classification (1):
358/403

Current US Cross Reference Classification (2):
358/488

☐ 6. Document ID: US 5953136 A

L8: Entry 6 of 16 File: USPT Sep 14, 1999

DOCUMENT-IDENTIFIER: US 5953136 A
TITLE: Method for producing photographic copies from photographic originals

Application Filing Date (1):
19970804

Brief Summary Text (24):
By this calibration of the second printer to the first printer, it is thus possible for the original-specific data of the first pass to be utilized effectively and simply for the second and subsequent passes. It is no longer necessary to rescan the originals (frames) in the second printer. In this way, an optimal utilization of the printers and efficient processing of customer orders becomes possible. The first pass can be performed on a high-speed printer designed for high throughputs, which in interruption-free operation produces only the first copies each time and makes the original-specific data available to a second printer for any second copies that may be needed. The second copies, with the requisite corrections, are made on a second, and as a rule, less powerful, printer. This optimizes the use of the original-specific data ascertained by the first printer. In comparison to the rescanning of the original in the second printer, this method has the additional advantage that corrective measures improve picture quality of the second copy.

Brief Summary Text (25):
In an exemplary method of the invention, in calibrating the second printer to the first printer, the developed second copies, if they do not correspond well enough to the first copies, are scanned regionally. Again, this regional scanning can be pixel by pixel, and the scanning light transmitted or remitted from each scanned

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region of the second copies is delivered to a detector array. Here, the scanning light is broken down spectrally and converted into wavelength- and intensity-dependent electrical scanning signals. These electrical scanning signals are digitized and evaluated for emitting copy-specific data. With the aid of the copy-specific data, the original model (paper-related film model), adapted to the copy material, is optimized for the second printer, while the original-specific data determined in the first pass remain unchanged. This process of making second copies, analyzing them and modifying the original is repeated until the original model is optimal. In other words, until second copies that are substantially identical to the first copies can be made with the second printer using the original-specific data determined in the first pass.

Brief Summary Text (28):
Exemplary embodiments also use production negatives for the setup test method for calibrating the second printer to the first printer.

Detailed Description Text (7):
Before the setup test process for calibrating the second printer to the first printer is explained, some preliminary remarks will be provided regarding the determination of the quantities of copying light or exposure times in known photographic printers. If the quantities of copying light needed for the colors blue, green and red are to be ascertained correctly, it is advantageous--as already explained above--to use two models, to represent the photo paper and the negative film, namely a paper model and a paper-related film model. This modeling is symbolically illustrated in FIG. 2. The paper model 10 (10a) essentially replicates how the paper density, that is, the color density of the photo paper, which is determined essentially by the concentration of the pigments yellow, magenta and cyan, changes for a particular photo paper as a function of changes in the copying light in the three basic colors, blue, green and red. The paper model 10 (10a) is accordingly representative of the absorption properties of the photo paper if there are changes in the exposure to light. In particular, the paper model 10 (10a) also takes into account overlaps of the spectral paper sensitivities and secondary absorptions, a term understood to mean that subjecting the photo paper to light of one of the basic colors causes changes in the optical density of the photo paper in all three colors. Conversely, the paper-related film model 20 (20a) indicates how the photo paper reacts to changes in the negative film density when the copying light is kept constant. This model thus also shows how the copying light must be modified in order to be able to compensate for deviations in the actually measured density of a negative from the average film density. However, this means that the film has to be looked at "with the eyes of the photo paper", which are generally different from the "eyes of the detector array 3". For this reason, the term paper-related film model is used.

Detailed Description Text (32):
An exemplary method of the invention is characterized by having the second printer calibrated to the first printer by means of a setup test process. For the ensuing description it will be assumed that the first printer for making the first copies has already been calibrated as described above. That is, from all the negative frames on the test films, uniformly gray, essentially identical test copies are made with the first printer, using the .DELTA.k.sub.n vector, determined individually for each negative frame, with seven KLT coefficients and the optimal exposure matrix E. The setup test method for calibrating the second printer to the first printer is then carried out as follows.

Detailed Description Text (37):
In this exemplary method of the invention, it has been assumed that the first printer PR is calibrated, and the second printer PRa is calibrated to the first printer PR. These calibrations can be performed as described in detail above. Also, by way of example, the case where the negative films to be copied have been spliced together into a length of film which is wound up onto a roll will be referenced.

Detailed Description Text (52):
For calibrating the first printer or for calibrating the second printer to the first printer, the above-described special test films need not necessarily be used. It is also possible to carry out these calibrations--that is, especially the determination or optimization of the paper models and the paper-related film models--using production negatives. The term "production negatives" means negatives that occur in normal operation, for instance in processing customer orders. Another procedure for calibrating the two printers using production negatives, for instance, will now be described.

Detailed Description Text (62):
For calibrating the second printer to the first printer, the procedure is logically the same using the same production negatives as in the calibration of the first printer, but this time in the second printer, the vectors AL that were determined in the setup-tested first printer are used as the original-specific data. That is, these vectors .DELTA.k.sub.n are not re-determined in the second printer. As a criterion showing that the second printer is calibrated to the first, or in other words that the paper model and the paper-related film model are optimal for the second printer, the condition can be used that the paper density vectors .DELTA.d.sub.n of the developed second copies, vectors that have been determining using a densitometer located for instance at the output of the paper processor downstream of the second printer, are essentially identical to the paper density vectors of the corresponding first copies that were made on the calibrated first printer.

Current US Original Classification (1):
358/504

Current US Cross Reference Classification (1):
358/1.9

CLAIMS:

1. A method for producing photographic copies from photographic originals in which first copies are produced from the originals in a first pass on a first photographic printer and second copies are produced in a second pass on a second photographic printer, comprising the steps of:

a) scanning the original regionally in a scanning station of the first printer;

b) delivering scanning light transmitted from each scanned region of the original to a detector array for spectral analysis and conversion into wavelength- and intensity-dependent electrical scanning signals;

c) digitizing and evaluating the electrical scanning signals to ascertain original-specific data that is specific to the original;

d) ascertaining first quantities of copying light for projection in a computing and control unit of the first printer with the aid of the ascertained original-specific data and an original model adapted to copy material wherein said model represents behavior of the copy material due to changes in spectral composition of the original;

e) ascertaining control signals for color filters and shutters provided in a copying station of the first printer from the first quantities of copying light;

f) placing the filters and shutters in a copying beam path according to the control signals;

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g) developing first copies in a developing station;

h) calibrating the second printer to the first printer by a setup test method comprising the steps of:

i) delivering the original-specific data to a computing and control unit of the second printer;

ii) ascertaining second quantities of copying light for projection in a computing and control unit of the second printer with the aid of the original-specific data and an original model of the second printer, wherein said original model of the second printer represents said behavior of the copy material due to changes in spectral composition of the original;

iii) ascertaining control signals for color filters and shutters provided in a copying station of the second printer from the second quantities of copying light;

iv) placing the filters and shutters in a copying beam path of the second printer according to the control signals;

v) developing second copies in a developing station of the second printer;

vi) analyzing said second copies; and

vii) optimizing the original model for the second printer based on the analysis until the second copies are identical to the first copies.

6. The method according to claim 1 wherein production negatives are used in the setup test method for calibrating the second printer to the first printer.

☐ 7. Document ID: US 5818960 A

L8: Entry 7 of 16 File: USPT Oct 6, 1998

DOCUMENT-IDENTIFIER: US 5818960 A
TITLE: Characterization calibration

Application Filing Date (1):
19950320

Current US Cross Reference Classification (2):
358/1.9

Current US Cross Reference Classification (3):
358/504

Current US Cross Reference Classification (4):
358/518

Current US Cross Reference Classification (5):
358/523

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CLAIMS:

21. A method of adapting a color printer characterization, comprising:

defining a reference first printer having a reference aim response;

characterizing the first printer across channels of the reference printer to produce a reference characterization;

determining a calibration of a second printer against the reference aim response using each channel separately by:

printing a sequence of patches;

measuring responses of the patches; and

generating a calibration relationship between the measured responses and the reference aim response; and

incorporating the calibration relationship into a characterization transform definition of the characterization modifying the reference characterization using the calibration to produce an adapted characterization for the second printer.

☐ 8. Document ID: US 5748331 A

L8: Entry 8 of 16 File: USPT May 5, 1998

DOCUMENT-IDENTIFIER: US 5748331 A
TITLE: Process control strip and method for recording

Application Filing Date (1):
19970306

Brief Summary Text (10):
The traditional calibration of the second sub-process, namely the image-wise exposure of the printing plate in a copier device and the development of the exposed printing plate in a developing station, often occurs according to the micro-line method with the assistance of precision measuring strips, for example with the FOGRA precision measuring strip PMS-I or the UGRA Offset Test Wedge 1982. These precision measuring strips are described in detail in, for example, the "Fogra Praxis Report" No. 34, 1990, Fogra-PMS-I and UGRA-Offset-Testkeil 1982 (FOGRA=Deutsche Forschungsgesellschaft fur Druck- und Reproduktionstechnik e.V.).

Current US Original Classification (1):
358/302

Current US Cross Reference Classification (3):
358/461

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☐ 9. Document ID: US 5493321 A

L8: Entry 9 of 16 File: USPT Feb 20, 1996

DOCUMENT-IDENTIFIER: US 5493321 A
TITLE: Method and apparatus of characterization for photoelectric color proofing systems

Application Filing Date (1):
19930225

Detailed Description Text (30):
Once the dot lookup tables have been generated for the full color gamut, the dot lookup tables are used by the computer 36 to produce an off-press proof that will match the target color gamut of the particular printing process being proofed. By using the present invention, the full color gamut characterization process for color proofing systems can be reduced to the printing and subsequent calibration of a single test pattern page 100.

Current US Cross Reference Classification (3):
358/300

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 10. Document ID: US 5285297 A

L8: Entry 10 of 16 File: USPT Feb 8, 1994

DOCUMENT-IDENTIFIER: US 5285297 A
TITLE: Apparatus and method for color calibration

Application Filing Date (1):
19920819

Detailed Description Text (174):
a. Provide a first database 210 and a second database 212 for the first, reference, and second, to be calibrated, printing devices 214 and 216 respectively. The two databases comprise first and second pluralities of colorant values, preferably CMYK values. Preferably, databases 210 and 212 are "good" databases for sampling the operations of output devices 214 and 216 respectively, in the sense that, once printed by printers 214 and 216 respectively and scanned by the scanner 222, each database has a predetermined pattern such as a pattern in which there is a minimum density of data in every area of interest. The predetermined pattern may, for example, be a generally even distribution throughout generally the entirety of the physically producible color space, if it is desired to sample generally the entirety of the color space.

Current US Original Classification (1):
358/518

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Current US Cross Reference Classification (1):
358/520

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 11. Document ID: US 5200816 A

L8: Entry 11 of 16 File: USPT Apr 6, 1993

DOCUMENT-IDENTIFIER: US 5200816 A
TITLE: Method and apparatus for color processing with neural networks

Application Filing Date (1):
19910719

Detailed Description Text (129):
a. Provide a first database 210 and a second database 212 for the first, reference, and second, to be calibrated, printing devices 214 and 216 respectively. The two databases comprise first and second pluralities of colorant values, preferably CMYK values. Preferably, databases 210 and 212 are "good" databases for sampling the operations of output devices 214 and 216 respectively, in the sense that, once printed by printers 214 and 216 respectively and scanned by the scanner 222, each database has a predetermined pattern such as a pattern in which there is a minimum density of data in every area of interest. The predetermined pattern may, for example, be a generally even distribution throughout generally the entirety of the physically producible color space, if it is desired to sample generally the entirety of the color space.

Current US Original Classification (1):
358/518

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 12. Document ID: US 5185673 A

L8: Entry 12 of 16 File: USPT Feb 9, 1993

DOCUMENT-IDENTIFIER: US 5185673 A
TITLE: Automated image calibration

Application Filing Date (1):
19910612

Detailed Description Text (25):
(d) For both color and black and white calibration, a collection of patterns (such as checkerboards). These patterns are used by the scanner software 202 to measure the response of the print path for images in which the scanner 224 or scanner software 202 did a halftone conversion from continuous-tone to binary (B&W only or 8 colors). In an alternate embodiment, multiple calibration images having multiple

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halftone samples for the calibration of a single print path may be created by the scanner software 202.

Detailed Description Text (55):
In an alternate embodiment, multiple calibration images having multiple halftone samples for the calibration of a single print path may be created by the scanner software 202.

Current US Original Classification (1):
358/296

Current US Cross Reference Classification (1):
358/1.9

Current US Cross Reference Classification (2):
358/406

Current US Cross Reference Classification (3):
358/463

Current US Cross Reference Classification (4):
358/464

Current US Cross Reference Classification (5):
358/518

☑ 13. Document ID: US 4941038 A

L8: Entry 13 of 16 File: USPT Jul 10, 1990

DOCUMENT-IDENTIFIER: US 4941038 A
** See image for Certificate of Correction **
TITLE: Method for color image processing

Application Filing Date (1):
19890113

Brief Summary Text (13):
The second calibration may comprise the steps of printing with the output device a plurality of color patches in accordance with a set of device dependent color output values. The patches are measured colorimetrically to obtain a set of device independent color output values corresponding to the patches. The device independent and dependent color output values are correlated, and other device independent color output values are interpolated from the set to correspond to output not represented by the patches. An output lookup table is created from the device independent and device dependent color output values so as to map the uniform color space data to the output CMY color data.

Current US Original Classification (1):
358/518

Current US Cross Reference Classification (1):
358/504

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 14. Document ID: US 4802007 A

L8: Entry 14 of 16 File: USPT Jan 31, 1989

DOCUMENT-IDENTIFIER: US 4802007 A
TITLE: Picture pick-up and display system with electronic and printed picture display

Application Filing Date (1):
19871201

Brief Summary Text (5):
It is described that subsequent to the calibration of the video channel, while observing the colour picture on the colour monitor, colour changes can be introduced into the picture with the aid of setting means which changes correspond to the colour changes desired in the printed picture.

Current US Cross Reference Classification (1):
358/527

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 15. Document ID: US 4454540 A

L8: Entry 15 of 16 File: USPT Jun 12, 1984

DOCUMENT-IDENTIFIER: US 4454540 A
TITLE: Automatic level control circuit

Application Filing Date (1):
19820126

Current US Cross Reference Classification (3):
358/466

Current US Cross Reference Classification (4):
358/496

CLAIMS:

17. The method as claimed in claim 16 further comprising the step of:

forming first and second calibration portions on said printed circuit boards such that said beam of light sweeps across said first calibration portion during the step of generating automatically said first reference signal and sweeps across said second calibration portion during the step of comparing said intermediate summed

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second signals with said fixed voltage signal.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 16. Document ID: US 4454539 A

L8: Entry 16 of 16 File: USPT Jun 12, 1984

DOCUMENT-IDENTIFIER: US 4454539 A
TITLE: Automatic level control circuitry

Application Filing Date (1):
19820126

Current US Cross Reference Classification (3):
358/466

Current US Cross Reference Classification (4):
358/496

CLAIMS:

11. The improvement as claimed in claim 4 wherein said printed circuit board comprises first and second calibration areas and at least one of said first signals is produced by said detector means when said beam of light sweeps across said first calibration area of said printed circuit board.

12. The improvement as claimed in claim 11 wherein said at least one of said summed second signals is produced by said detector means when said beam of light sweeps across said second calibration area of said printed circuit board.

19. The method as claimed in claim 14 further comprising the step of:

forming first and second calibration portions on said printed circuit boards such that said beam of light sweeps across said first calibration portion during said first time interval and sweeps across said second calibration portion during said second time interval.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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Term	Documents
(4 AND 5 AND 7).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	16
(L5 AND L7 AND L4).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	16

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